

CLAIMS

1 1. A test tube, comprising:
2 a tube body of unitary construction comprising an enclosed sidewall and an integral bottom
3 surface that together define a tubular container having an open top, wherein said bottom surface
4 has a concave interior surface and a planar exterior surface upon which machine readable data is
5 encoded within multi-layered opaque coatings of contrasting colors that are deposited onto said
6 planar exterior surface to uniquely identify said test tube.

1 2. The test tube of claim 1, wherein said multi-layered opaque coating comprises:
2 a first layer of light colored opaque material deposited onto said planar exterior surface;
3 and
4 a second layer of dark colored opaque material deposited onto said first layer, wherein
5 select portions of said second layer are removed to define a machine readable data matrix code
6 indicative of said test tube.

1 3. The test tube of claim 1, wherein said sidewall is defined by a plurality of segments having
2 different cross sections, said plurality of segments comprising:
3 a first cylindrical sidewall segment integral with said bottom surface;
4 a second cylindrical sidewall segment; and
5 a truncated conical segment located between said first and second cylindrical sidewall

6 segments and having increasing diameter closer to said open top.

1 4. The test tube of claim 3, wherein said multi-layered planar coating comprises:
2 a first layer of opaque white material deposited on said exterior planar surface; and
3 a second layer of opaque black material deposited on said first layer.

1 5. The test tube of claim 3, wherein said multi-layered planar coating comprises:
2 a first layer of white foil deposited on said exterior planar surface; and
3 a second layer of black foil deposited on said first layer.

1 6. A method of manufacturing a test tube, comprising the steps of:
2 providing a tube body of unitary construction comprising an enclosed sidewall and an
3 integral bottom surface that together define a tubular container having an open top, wherein said
4 bottom surface has a concave interior surface and a planar exterior surface;
5 depositing a multi-layered opaque coating onto the planar exterior surface to provide a data
6 matrix code that uniquely identifies the test tube, wherein said step of depositing comprises the
7 steps of

8 (i) depositing a first layer of opaque material onto the planar exterior surface;

9 (ii) depositing a second layer of opaque material onto the first layer, wherein the
10 first layer and the second layer are contrasting colors; and

11 (iii) removing portions of the second layer to define the data matrix code.

1 7. The method of claim 6, wherein said step of depositing a first layer comprises the step of
2 hot stamping the first layer onto the planar exterior surface.

1 8. The method of claim 7, wherein said step of depositing a second layer comprises the step
2 of hot stamping the second layer onto the first layer.

1 9. The method of claim 8, wherein said step of removing portions of the second layer to
2 define the data matrix code comprises the step of applying a coherent light source to remove the
3 select portions of the second layer to define the data matrix code.

1 10. The method of claim 9, wherein the coherent light source is a laser.

1 11. A method of marking a test tube having a tube body of unitary construction comprising an
2 enclosed sidewall and an integral bottom surface that together define a tubular container having
3 an open top, wherein the bottom surface has a concave interior surface and a planar exterior
4 surface, said method of marking comprising the steps of:

5 depositing a multi-layered opaque coating onto the planar exterior surface to provide a data
6 matrix code that uniquely identifies the test tube, wherein said step of depositing comprises the
7 steps of

8 (i) depositing a first layer of opaque material onto the planar exterior surface;

9 (ii) depositing a second layer of opaque material over the first layer, wherein the
10 first layer and the second layer are contrasting colors; and

11 (iii) removing portions of the second layer to define the data matrix code.

1 12. The method of claim 11, wherein said step of depositing a first layer comprises the step
2 of hot stamping the first layer of opaque material onto the planar exterior surface.

1 13. The method of claim 12, wherein said step of depositing a second layer comprises the step
2 of hot stamping the second layer of opaque material onto the first layer.

1 14. The method of claim 13, wherein said step of removing portions of the second layer to
2 define the data matrix code comprises the step of applying a coherent light source to remove the
3 select portions of the second layer to define the data matrix code.

1 15. The method of claim 14, wherein said coherent light source is a laser.

1 16. The method of claim 11, further comprising the step of:
2 depositing a multi-layered opaque coating onto the enclosed sidewall to provide a second
3 data matrix code that uniquely identifies the test tube.

1 17. The method of claim 16, wherein said step of depositing a multi-layered opaque coating
2 onto the enclosed sidewall comprises the steps of:

3 (i) depositing a first sidewall layer of opaque material onto the exterior sidewall;

4 (ii) depositing a second sidewall layer of opaque material over the first sidewall
5 layer, wherein the first sidewall layer and the second sidewall layer are contrasting colors;
6 and

7 (iii) removing portions of the second sidewall layer to define the second data matrix

8 code.

1 18. The method of claim 11, further comprising the step of removing portions of the second
2 layer to define a human readable alphanumeric code.

1 19. The method of claim 11, further comprising the step of removing portions of the second
2 layer to define a human readable alphanumeric code around the periphery of the planar exterior
3 surface.

1 20. A test tube, comprising:
2 a cylindrical side wall open at its upper end and closed at its lower end by a bottom wall,
3 said bottom wall having a concave interior surface and a planar exterior surface;
4 a covering integrally applied to said exterior surface, said covering having a first layer
5 overlying a second layer, said first and second layers being opaque and of contrasting colors; and
6 machine readable data encoded into said covering by selective removal of portions of said
7 first layer in order to expose corresponding underlying portions of said second layer.

1 21. A test tube, comprising:
2 a tube body of unitary construction comprising an enclosed sidewall and an integral bottom
3 surface that together define a tubular container having an open top, wherein said bottom surface
4 has a concave interior surface and a planar exterior surface upon which machine readable data is

- 5 encoded within an opaque coating of contrasting colors deposited onto said planar exterior surface
- 6 to uniquely identify said test tube.